CODE & PIXELS

Values, People, Experience & Technology

Leader in IETM Technology

13TH ANNIVERSARY 2012 - 2025

What is Quantum TechDocs – PRO

WE MEASURE OUR SUCCESS BY OUR CLIENT SUCCESS

G.GOPI KRISHNA gopikrishna@codeandpixels.net +91 9849527706

What is Quantum TechDocs – PRO

Artificial Intelligence Powered AI-IETM

Next-generation AI-powered IETM platform that extends the capabilities of traditional Level-4/Level-5 implementations.

No matter how many systems, subsystems, or thousands of technical manual pages you have, Quantum Tech Docs – PRO enables IETM implementation in just 5 days.

The Journey Behind the Evolution of AI-Powered IETMs

Why Traditional IETMs Are Failing Defence Projects – And Why the Industry Needs the Next Generation of AI-Powered IETMs

More Than 125 Defence IETMs Later… We Asked One Important Question

Over the last several years, Code and Pixels has successfully delivered more than 125 Interactive Electronic Technical Manuals (IETMs) for Defence programs across India, including missile systems, military vehicles, shipyards, defence electronics, and complex engineering platforms.

While working closely with Defence organizations and OEMs, we observed an important reality.

Although IETMs are mandatory in many defence projects, most of them are not being utilized to their full potential.

This is not because IETMs are unnecessary.

It is because the current generation of IETM technology has several limitations that prevent engineers, technicians, and maintenance teams from using them efficiently during real operations.

After studying these challenges for over two years, our engineering team developed a completely new approach.

The result is **Quantum Tech Docs – PRO**, an AI-powered next-generation IETM platform designed specifically for the future of Defence documentation.

Understanding the Real Problem

"Based on our implementation experience, many deployed IETMs remain significantly underutilized due to usability, cost, and interoperability challenges."

Modern Defence platforms are becoming increasingly complex.

Consider a warship, missile system, radar platform, or military vehicle.

A single platform is never built by one organization alone.

Instead, dozens or even hundreds of specialized OEMs contribute different subsystems.

These include:

- Radar systems
- Communication equipment
- Pumps
- Hydraulic systems
- Power systems
- Navigation equipment
- Weapon systems
- Electronic modules
- Mechanical assemblies
- Embedded software
- Vehicle components

A modern naval platform may easily involve 100 or more OEMs. Each OEM supplies its own technical manuals.

When IETMs are required, every OEM develops an independent IETM. The result?

A ship or missile may finally contain 100 separate IETMs.

The Biggest Challenge

Every IETM is developed independently.

Each one has:

- A different interface
- Different navigation
- Different database structure
- Different search mechanism
- Different installation process
- Different technology stack

Although all these IETMs belong to the same platform, they cannot communicate with each other.

They behave as completely independent applications.

For maintenance engineers, this creates a significant challenge.

If a technician is diagnosing a fault that involves multiple subsystems, there is **no single place to search across all technical information**.

Instead, engineers must manually open multiple IETMs and search one by one.

This consumes valuable maintenance time and reduces operational efficiency. The actual purpose of IETM is lost.

Manuals /Pages to Database Conversion Is another Major Cost

Traditional IETM development requires conversion of thousands of pages into structured databases such as HTML or XML. Each page has to be converted to database

This process is:

- Time-consuming
- Labour-intensive
- Expensive
- Difficult to maintain

For large defence programs containing 30,000 pages or more, the database conversion effort alone can cost several lakhs, even before software licensing and implementation costs are considered.

For many Defence projects involving hundreds of suppliers, this becomes difficult to implement economically.

The Practical Challenge for OEMs

Consider a small OEM supplying equipment worth ₹5 lakh.

If the same supplier is expected to develop a sophisticated S1000D-based IETM costing nearly the same amount, the business case becomes difficult.

Now multiply this across hundreds of suppliers.

The cost and complexity increase dramatically.

This is one of the major reasons many IETM implementations struggle to deliver the expected operational benefits.

Why Many IETMs Remain Underutilized

Based on our experience across numerous Defence projects, the most common challenges include:

- High development cost
- High maintenance cost
- No communication between IETMs from different OEMs
- Different interfaces and user experiences
- Lengthy page-to-database conversion
- Expensive implementation for large documentation sets
- Difficult searching across multiple systems
- Limited usability during field maintenance

As a result, many maintenance teams still prefer consulting printed manuals because locating information is often quicker than navigating multiple standalone IETMs.

Defence Documentation Must Evolve with Artificial Intelligence

The way people access information has fundamentally changed.

Today, engineers expect to ask questions naturally—just as they do with modern AI assistants.

Traditional HTML- or XML-based IETMs were designed for a different era.

Defence maintenance now demands systems that can:

- Understand natural language questions
- Search across large volumes of documentation
- Connect information from multiple subsystems
- Provide faster troubleshooting assistance
- Reduce maintenance time
- Improve technician productivity

Artificial Intelligence is no longer an optional feature—it is becoming essential for the next generation of technical documentation.

Introducing Quantum Tech Docs – PRO

After more than two years of dedicated research and development, **Code and Pixels** has developed **Quantum Tech Docs – PRO**, a next-generation AI-powered IETM platform.

Built on the Indian Defence Standard JSG 0852, while incorporating valuable concepts from internationally accepted documentation practices, Quantum Tech Docs – PRO is designed to overcome the limitations of traditional IETMs.

The platform aims to deliver:

- AI-assisted information retrieval
- Faster deployment
- Simplified implementation
- Reduced documentation cost
- Improved usability
- Unified access to technical information
- Modern user experience
- Scalable architecture for complex Defence platforms

Most importantly, it is designed to help Defence organisations move beyond isolated technical manuals towards a smarter, more connected documentation ecosystem.

The Future of Defence Technical Documentation

The future is no longer about creating another IETM.

It is about creating an intelligent knowledge platform that enables Defence personnel to find the right information instantly, regardless of which OEM originally supplied the equipment.

That is the vision behind **Quantum Tech Docs – PRO**.

It represents the next evolution of Interactive Electronic Technical Manuals—bringing Artificial Intelligence, usability, and operational efficiency together in a single platform.

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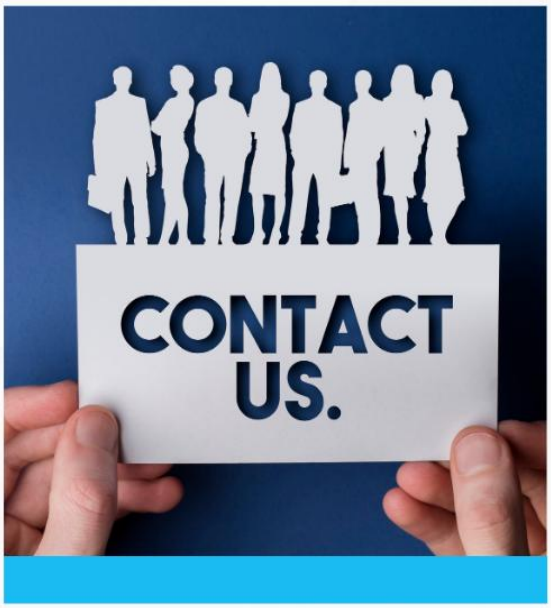
Gopi Krishna

+91 98495 27706

gopikrishna@codeandpixels.net

www.codeandpixels.net

CNP Elite Tower, Plot Number 4, Door Number – 3-11-206/4, Road Number -5, Sri Shankar Colony, Siris Road, L.B Nagar, Hyderabad 500074, Telangana State



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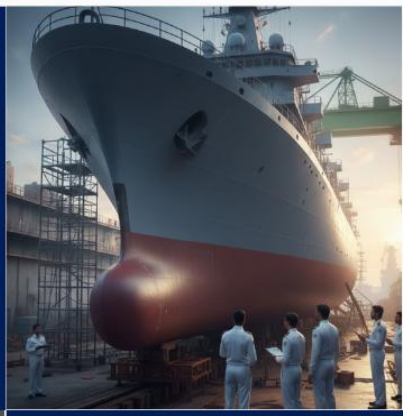
Thank You

We are Just a Call away